

**Remarks**

Reconsideration of the above identified application in view of the preceding amendments and following remarks is respectfully requested. Claims 1-8 and 13-25 will be pending upon entry of this paper. By this Amendment, Applicants have amended Claims 1, 2, 4, 13, 20 and 25 and cancelled Claims 9-12 and 26. These amendments have not been necessitated by the need to distinguish the present invention from any prior art and were made solely to more fully claim the invention. It is respectfully submitted that no new matter has been introduced by these amendments, as support therefor is found throughout the specification and drawings.

**Restriction**

Reconsideration of the restriction requirement is respectfully requested. Applicants view it as appropriate to include in a single application the claims presented herein. In regard to Claim 25, it recites similar structural limitations, which are the special technical feature to distinguish over the prior art, namely the nanotopographic features superimposed on the micromachined surface structures. Thus, it is extremely inefficient to separate examination of Claim 25. This inefficiency should be the overriding concern in the propriety of the restriction requirement.

The current guidelines on restriction even suggest the appropriateness of examining separate groups of claims when said examination would not be unduly burdensome. Here, Applicant contends that Claim 25 is not even a separate invention, but for the sake of argument, if it were, in the interest of efficiency, this guideline should be applied in the

instant case because additional searching will not be required as withdrawn Claim 25 has no additional limitations over the currently pending claims.

In view of the foregoing, Applicant respectfully requests the Examiner to reconsider and withdraw the restriction requirement and ask that Claim 25 be examined in this application.

**35 U.S.C. §102**

In the Office Action, Claims 1-5, 7 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by Clark et al. (the Clark reference).

The Clark reference discloses cell guidance by ultrafine topography of grating surfaces. Once the fused quartz is patterned, the grating surfaces have a single type of cell guided thereon such as chick embryo cerebral neurones.

In contrast, Claim 1 recites a tissue engineered structure including a substrate defining micromachined surface structures, wherein said micromachined surface structures include nanotopographic features, the nanotopographic features having a first portion configured to enhance adhesion of a first cell type and a second portion configured to enhance adhesion of a second cell type and being arranged in such a manner so as to localize and organize the first and second cell types into desired subassemblies within said micromachined surface structures; a first cell type seeded microfluidically, and organized and localized on the substrate by the first portion to form a first subassembly; and a second cell type seeded microfluidically, and organized and localized on the substrate by the second portion to form a second subassembly. Consequently, the first and second cell types are organized into first and second

subassemblies by the first and second portions, respectively. The Clark reference does not disclose such a structure because it is simply limited to a discussion of how individual cell types respond. Accordingly, Claim 1 and each of the remaining claims depending therefrom distinguish the subject invention from the Clark reference. Therefore, withdrawal of the rejection is respectfully requested.

In the Office Action, Claims 1-8 and 13-24 were rejected under 35 U.S.C. §102(a) as being anticipated by Vacanti et al. (US 2007/0281353).

Vacanti et al. utilize a nanoporous membrane, which is discrete from the micromachined channels. The nanoporous membrane separates cells that are introduced into the separate chambers.

In contrast, as noted above, Claim 1 recites that, *inter alia*, micromachined surface structures include nanotopographic features, the nanotopographic features having a first portion configured to enhance adhesion of a first cell type and a second portion configured to enhance adhesion of a second cell type. Consequently, the nanotopographic features are not separate and discrete but rather superimposed on (e.g., a part of) the micromachined surface structures. For example, the claimed invention could be one chamber with nanopatterns on the surface that guide a mixed cell population to specific separated subpopulations in the chamber. The membrane of Vacanti et al. is different and Vacanti et al. do not disclose such a structure. Accordingly, Claim 1 and each of the remaining claims depending therefrom distinguish the subject invention from the Vacanti et al. and an action acknowledging the same is respectfully requested.

Turning to Claim 13, it similarly recites, *inter alia*, includes micromachined surface structures having nanotopographic features superimposed thereon. Vacanti et al. do not disclose such a structure. Accordingly, Claim 13 and each of the remaining claims depending therefrom distinguish the subject invention from Vacanti et al. and an action acknowledging the same is respectfully requested.

**35 U.S.C. §103**

In the Office Action, Claims 1-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Clark reference.

Claim 1 has been amended to include the presence of two cell types, which is not shown or suggested in the Clark reference. Accordingly, Claims 1-8 patentably distinguish over the Clark reference and an action acknowledging the same is respectfully requested.

**Double Patenting**

In the Office Action, Claims 1, 2, 6, 24 and 32-36 were rejected under the judicially created doctrine of double patenting with respect to U.S. Patent Application Ser. No. 10/557,081. In order to overcome the non-statutory double patenting rejection, Applicants submit herewith a terminal disclaimer that should obviate the rejection under the judicially created doctrine of double patenting and an action acknowledging same is respectfully requested.

**35 U.S.C. §112(2)**

In the Office Action, Claims 1-8 and 13-22 were objected to as being indefinite. Claims 1, 4, 13 and 20 have been amended to address the indefiniteness concerns and an action acknowledging the same is respectfully requested.

Any additional fees or overpayments due as a result of filing the present paper may be applied to Deposit Account No. 04-1105. It is respectfully submitted that all of the claims now remaining in this application are in condition for allowance, and such action is earnestly solicited.

If after reviewing this amendment, the Examiner believes that a telephone interview would facilitate the resolution of any remaining matters the undersigned attorney may be contacted at the number set forth herein below.

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Respectfully submitted,

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